

- LINDFORS, L.-G., ALMEMARK, M., OSCARSSON, C. and SPÄNNAR, C. (1998): A Manual for the Calculation of Ecoprofiles Intended for Third Party Certified Environmental Product Performance Declarations. IVL, Stockholm
- LÖRCHER, M., ADLER-KÖHLER, R. and SALZGEBER C. (1994): Produkt-Ökobilanz des Pfister-Öko-Brottes für die Ludwig Stocker Hopfisterei GmbH. Akku Umweltberatungs GmbH, Munich, p. 115
- MATTSSON, B. (1996): Life Cycle Assessment (LCA) of Agricultural and Industrial Food Production. In: KRISTENSEN, N. H. and HØGH-JENSEN, H. (Eds.): New Research in Organic Agriculture, Down to Earth – and Further Afield. Proceedings Vol. 2, 11th International Scientific IFOAM Conference, Copenhagen, pp. 180-184
- MATTSSON, B., CEDERBERG, C. and LJUNG, M. (1998): Principles for Environmental Assessment of Land Use in Agriculture, SIK-report No. 642, SIK, Göteborg, Sweden
- MÜLLER-REISSMANN, K.F. (1990): Ökologische Ernährungssysteme. C.F. Müller, Karlsruhe. In: LÖRCHER, M., ADLER-KÖHLER, R. and SALZGEBER C. (1994): Produkt-Ökobilanz des Pfister-Öko-Brottes für die Ludwig Stocker Hopfisterei GmbH. Akku Umweltberatungs GmbH, Munich, p. 57
- PERSON, L. and ZACKRISSON, M. (1995): Life cycle assessments including the working environment – A case study of fridge/freezers from Electrolux, Part II: DATA, 95833. IVF, Göteborg, Sweden
- PYLER, E.J. (Ed.) (1988): Baking Science and Technology, Vol II. Sosland Publishing Company, Merriam, Kansas, USA, p. 754
- SLU (1996): Databok för driftsplanering. Swedish University of Agricultural Sciences, Speciella skrifter 62, Uppsala, Sweden, p. 448
- SNV (1992): Växthusgaserna – utsläpp och åtgärder i internationellt perspektiv. Report 4011, Naturvårdsverket, Stockholm
- SONESSON, U. (1993): Energy Analysis of Biofuels from Winter Wheat, Rape Seed and Salix. Report 174, Swedish University of Agricultural Sciences, Uppsala, Sweden, p. 54
- TAYLOR, A.E.B., O'CALLAGHAN P.W. and PROBERT S.D. (1993): Energy Audit of an English Farm. Appl. Energy 44, 315-335
- TILLMAN, A.-M. (1994): Godstransporter i livscykelanalys, Schablonvärden för energianvändning och emissioner. Report 1994:1, Technical Environmental Planning, Chalmers University of Technology, Göteborg, Sweden, p. 5.
- VAN ZEIJTS, H., LENEMAN, H. and WEGENER SLEESWIJK, A. (1996): Fitting Fertilization in LCA – Allocation to Crops in a Cropping Plan. In: CEUTERICK, D. (Ed.): Pre-prints from International Conference on Application of Life Cycle Assessment in Agriculture, Food and Non-Food Agro-Industry and Forestry: Achievements and Prospects. VITO, Mol, Belgium, pp. 69-76
- WEGENER SLEESWIJK, A., LANKREIJER, R.M. and VAN DER VOET, E. (1992): Tarwe en Milieu: Hoe boert de Zeeuwse Vlegel? Een levenscyclusanalyse van de milieueffecten van tarweteelt bij verschillende wijzen van bemesting en gewasbescherming. Wetenschapswinkel, Leiden, The Netherlands. In: WEIDEMA, B.P. (1993): Life Cycle Assessments of Food Products. Proceedings of the 1st European Invitational Expert Seminar on Life Cycle Assessments of Food Products, Lyngby, Denmark, pp. 43-56
- WEIDEMA, B. P., PEDERSEN, R. and DRIVSHOLM, T.S. (1995): Life Cycle Screening of Food Products – Two Examples and some Methodological Proposals. Danish Academy of Technical Sciences, Lyngby, Denmark, p. 193

LCA Literature

Eco-Factors BUWAL 297 (ecological scarcity) and Eco-Indicator 95 Weighting Factors for widely used Life Cycle Inventories

ÖBU (Swiss Association for Environmentally Conscious Management) publishes a compendium of all inventory parameters reported in three frequently used LCA inventory studies, together with their appropriate weighting factors in two well-known impact assessment (LCIA) methods. The brochure, developed together with EMPA St. Gall and Infras Zurich, lists and comments the parameters from the following Life Cycle Inventories: Energy Systems (ETH-ESU, 1996), Packaging (BUWAL 250, 1996, and Transports (INFRAS, 1995). Weighting factors are given for the method of ecological scarcity (Eco-factors BUWAL 297) and Eco-indicator 95. The list of factors goes far beyond the original LCIA publications, since every inventory parameter occurring in the inventories is discussed, and a rationale for its weighting factor given (where applicable).

This correlation tool between inventories and impact assessment methods will facilitate and improve LCA work by

- Guidance to LCA practitioners for the interpretation of inventory results. The six correlation tables correspond exactly to the parameter lists in the respective inventories, so that the weighting factors can be directly introduced.
- Standardization of the weighting factors for all occurring inventory parameters, which enhances the transparency of LCIA and contributes to a better comparability of results.

The brochure does not contain any inventory data (which can be found in the original publications). Also, it does not attempt to define "optimal" parameter lists for any LCA application, or prescribe which inventory items should be collected to obtain meaningful results (e.g. for the inventory of a company or production site). It is partially based on results derived from the new study BUWAL 300 (Schriftenreihe SRU Nr. 300) on the impact assessment in packaging LCAs, which will be soon available from the Swiss Packaging Institute SVI, Brückfeldstr. 18, Postfach, CH-3000 Bern 26.

The ÖBU publication "Zuordnung der Ökofaktoren 97 und der Gewichtungsfaktoren aus Eco-Indicator 95 zu wichtigen Standard-Inventaren" (in German), including a diskette with all tables (Excel 5.0) was published in September 1998 and can be ordered now (price CHF 145.-, ÖBU and SVI members, university students or faculty CHF 95.-). An English version of the tables (also Excel 5.0) is currently developed and will be available soon.

Ordering information: Swiss Association for Environmentally Conscious Management, Obstgartenstr. 28, CH-8035 Zurich/Switzerland, phone: +41-1-364-37-38, fax +41-1-364-37-11, e-mail: oebuinfo@oebu.ch